DOCUMENT RESUME

ED 408 827 FL 024 567

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TITLE Development of an English for Specific Purposes Technical Writing Course.
PUB DATE Mar 97
NOTE 12p.
PUB TYPE Reports - Descriptive (141)
EDRS PRICE MF01/PC01 Plus Postage.
DESCRIPTORS Articulation (Education); College Second Language Programs; *Computer Science; Course Descriptions; Course Organization; Curriculum Development; *English for Special Purposes; Foreign Countries; Higher Education; Instructional Materials; Scheduling; *Teacher Developed Materials; *Technical Writing; *Writing Instruction
IDENTIFIERS University of Aizu (Japan)

ABSTRACT

The two-term technical writing course at the University of Aizu (Japan) was developed to help computer science majors develop writing skills needed for academic and future career activities. The course was first organized and presented in 1994 and has undergone continuous evaluation and revision. During the first two years, it was presented in two sophomore terms using lesson plans and handouts developed by a courseware project team and designed to allow for adjustment by individual teachers. In the first year, these materials were supplemented by a technical writing textbook and handbook. By the third year, a draft of a university-developed technical writing handbook served as the text for the course's first term. The second term of the course was moved to the senior year to provide students with assistance in planning and writing their graduation research reports. The final version of the university's technical writing handbook will be available in 1997, and the text for the second term will be developed by 1998. (MSE)

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ED 408 827

Development of an English for Specific Purposes Technical Writing Course

John Izzo

Abstract

The University of Aizu Technical Writing course was established to help computer science majors develop writing skills needed for their academic and future career activities. The course was first organized and presented for the 1994 school year and has been undergoing continued evaluation and alteration. During the first two years, the course was presented in the two sophomore terms using courseware project team developed lesson plans and handouts. In the first year, these lesson plans and handouts were supplemented with a technical writing textbook and handbook. By the third year, a draft of the University of Aizu's *Technical Writing 1 Handbook* served as the text material for the first term of the course. However, the second term of the course was moved to the senior year to provide students needed guidance and assistance in the planning and writing of their graduation research reports. The finalized version of the University of Aizu's *Technical Writing 1 Handbook* will be published prior to the 1997 school year, and a *Technical Writing 2 Handbook* which will be designed around the university's research report format and requirements is planned for the 1998 school year.

Introduction

The University of Aizu was established in April 1993 with the goal of educating and graduating students who would become Japan's leading professionals in computer science and engineering. (Kunii, 1994) With this in mind, the university's curriculum has been planned to include courses that will provide its graduates with the ability to effectively communicate in English, the international computer science language. The capability to document scholarly and research activities in a form that can be readily disseminated to the international computer science community is considered to be essential for all scientists and engineers. Effective writing is a necessary skill for technical professionals, and it has been claimed that scientists and engineers spend 25% of their professional time on writing a variety of technically oriented documents

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(15% informal, and 10% formal). (Huckin, 1991) To prepare our students for these endeavors, a two-term English Technical Writing course has been included in the required curriculum of all University of Aizu students.

Courseware Project

The Technical Writing Courseware Project was formed in October 1993 to plan and develop materials, in English, for a two term course required of all University of Aizu students. The project team was composed of two Center for Language Research (CLR) staff members, Professor John Izzo and Assistant Professor Stephen Lambacher. The purpose of the project was to develop the course structure and the materials necessary to implement the technical writing course in the English language curriculum that had been established for computers science majors.

The specific goals of the project team were to develop, use, and evaluate the 1994 school year Technical Writing course structure and materials, to modify these for the following school year, and to complete a draft of a course text for the 1996 school year. This draft text would then be evaluated, modified, and published in its final form by March 1997. The courseware development team would then assume responsibility for annual evaluation, updating, and republishing of the text to ensure the document continued to meet the needs of the university's students.

Responsibilities

The courseware team divided responsibilities based upon the team members' experience and other CLR assignments. Professor Izzo assumed responsibility for developing the course material dealing with the writing process and selected writings to be taught in the fourteen sessions of the first term, as well as the technical articles and instructions topics to be taught in the last five sessions of the second term. Professor Lambacher, who was primarily teaching Pronunciation classes during the first term, was assigned to develop the material for the research report writing portion of the course which would be taught in the first nine sessions of the second term. This distribution of responsibil-

ities allowed Profession Lambacher to also participate in the Pronunciation courseware development efforts.

Course Planning

Since the University of Aizu opened in April 1993, all freshman level courses had to be planned and developed as they were being presented. Therefore, the entire CLR staff was involved in these activities throughout the 1993 school year. Relatively little time could be devoted to the planning and development of sophomore level courses, such as Technical Writing 1 & 2, that would not be taught until the following school year. However, technical writing course planning was initiated in late 1993 to ensure the availability of course textbooks for the 1994 school year. The initial planning for the course was accomplished by Professor J. Izzo, courseware project leader, and coordinated with Assistant Professor S. Lambacher, courseware project member.

The initial preparation activities were centered on a review of available textbooks to help plan and develop a basic course structure and to select an appropriate text for the level of ESP (computer science) students that would be taking the course. Developing and teaching freshman level composition courses during the 1993 school term greatly influenced both the determination of the technical writing course content and text selection. The planning accomplished was coordinated with other CLR staff members who were to be teaching Technical Writing 1 & 2.

Planned Content

During the course planning phase, it was determined that the need to restrict instruction material to fourteen 90-minute sessions for each of the two terms would greatly limit the topics that could be included in the course. In the limited time available, presentation of a comprehensive technical writing course for Japanese students in the sophomore year of college was determined to be virtually impossible.

Therefore, it was decided to concentrate on a small core of topics that included the technical writing process, selected technical writing techniques, several

basic, most frequently encountered writings. The writings selected for the first term were business letters, technically oriented essays, project progress reports, and proposals. In addition, a lesson on technical instructions was included to add flexibility to the course structure. The second term was to be centered around the planning, researching, developing, and writing of research reports, technical articles, and technical instructions if the topic was not adequately presented during the first term. All the documents are typical were considered to be writings required of engineers and scientists. (Huckin, 1991)

Significant class time in both terms was to be devoted to the writing process because the noted shortcomings in our freshman composition students' writing methodology. Experience with the composition students indicated that they did little planning, did not outline, poorly organized material, strayed from the topic of their writing, and wrote in a manner that required the reader to interpret the information presented. Most of these observations have been noted for inexperienced ESL writers in general. (Benson, 1995) E. Stewart, in research published in 1972, also had reported that foreign students are frequently described by American instructors as lacking "alalytical thinking." (Benson, 1995) Therefore, helping our students understand and adopt a good writing process was considered to be essential.

Instructional Materials

The textbook review during the initial course planning lead to the selection of what was considered to be the most appropriate text available for the level of ESP students involved and the topics to be covered. This textbook, *Technically-Write! Communicating in a Technological Era* by Ron S. Blicq, was selected for its approach to presenting the format, content, and writing requirements of the technical documents considered important for our students. It was decided that the book, as claimed by its author, included the types of technical writings that technologists, engineers, and scientists are most likely to encounter. (Blicq, 1993) In addition, the text appeared to be written in a manner that would be understood by our students.

However, the selected textbook did not present the writing process in sufficient detail to meet the needs of our students. Therefore, it was necessary to develop a set of lesson plans and handouts to serve as the primary teaching material

for the course. It was decided that the textbook and a handbook (*Handbook for Technical Writing* by C. T. Brusaw, et al) would serve as supplementary readings. The handbook was determined to be, as noted by its authors, a comprehensive and practical reference for students. (Brusaw, 1993)

Course Material Development

Although course material development activities were initiated in late 1993, the actual writing activities were not started until February 1994. At the time, course materials for the initial sessions of the first term were planned and written. Throughout the 1994 school year, lesson plans and student handouts were developed and coordinated so that they were completed several weeks in advance of their use. This allowed instructors time to review the course instructional material and to prepare any supplementary handouts desired.

The lesson plans and supplementary material were developed to permit individual professors the flexibility of instructing specific topics in a manner that was consistent with their personal teaching styles and their students' progress. The content and effectiveness of these lesson plans and handouts were evaluated, and it was determined that the initial first term lesson plans were too demanding for the students involved. Therefore, the lesson plans and handouts were later restructured to present material at a more appropriate pace during the 1995 school year.

Past Activities

The initial plan was to use the textbook and handbook for two years until a draft of a text specifically designed for the university's course could be completed. However, the 1994 school year experience with the selected text and handbook indicated that they were not adequately serving our students needs. Supplementing the courseware team developed handouts with text and handbook readings involved excessive assignments for our students. In addition, the *Handbook for Technical Writing* was determined to be above our average student's reading comprehension level. Therefore, the decision was made to revise the lesson plans and handouts developed by members of

the Technical Writing Courseware Project so that they could serve as the sole course material during the second year of technical writing classes. This material would also include footnotes in Japanese to explain new concepts that the students appeared to have problems understanding when presented only in English.

The knowledge gained in the first term resulted in the following term's instructional material being presented at a slower pace than initially planned. The lesson plans for the first nine session were planned and developed with the intent of providing students with a sound knowledge base of formal report planning, resource material acquisition, research techniques, note taking skills, formal report organization, report writing and formatting, and the production of a worthwhile final product. Lesson plans for the last five sessions of the term introduced the students to documentation requirements and writing techniques related to technical articles for publication and operational instructions.

Prior to the start of the 1995 school year, the Technical Writing Courseware Project participants created second-generation lesson plans to serve as the instructional material for the course. This material was developed to serve as both instructor lesson plans and student handouts that would be used as the reading material for the course. However, a glossary of computer terminology (*The Computer Glossary* by A. Freeman) was used for this and other CLR courses to help the students develop an understanding of the English vocabulary related to their studies. The lesson plans used in the 1995 school year were evaluated and modified. The revised lesson plans then served as the basis for the *Technical Writing 1 Student Handbook* that was developed and published for use in the 1996 school year, and for a *Technical Writing 2 Student Handbook* that was planned for the second term of the course.

In the first term of 1996 school year, the *Technical Writing 1 Student Handbook* was used as the course textbook. Although not previously planned, the decision was made to move Technical Writing 2 to the second term of the senior year. This move was made to provide the senior students with research paper instruction and assistance when they would be involved in the planning and writing of their graduation research reports. Dur to this change, the need for a *Technical Writing 2 Student Handbook* has been delayed until Septem-

ber 1998. In addition, the plans to include technical articles and operational instruction lessons will be eliminated from this section of the course.

Current Activities

The *Technical Writing 1 Student Handbook* was evaluated during the first term of the 1996 school year, and it is being being modified to incorporated needed revisions and to add material to improve its content. The handbook was found to be an effective instructional tool in most areas, and it eliminated the need for supplementary readings. However, a major revision of one lesson has been undertaken, and minor revisions are being incorporated in all other lessons in the handbook. Moreover, some of the material eliminated from the second term of the the course will be added to the handbook. These revisions will be completed in early 1997, and the handbook will be published in its final version in March.

Although the *Technical Writing 1 Student Handbook* will be considered to be in its final form when published in the March 1997, it is the intent of the Technical Writing Courseware Project members to perform an annual review, revision, and republication process. This will ensure that the handbook remains a current, useful tool for the University of Aizu Technical Writing students. The *Technical Writing 2 Student Handbook* will undergo a similar drafting, evaluation, and publishing process prior to its planned publishing in 1999.

Technical Writing 1 Student Handbook

The *Technical Writing 1 Student Handbook* has been developed to serve as the textbook for the University of Aizu's Technical Writing 1 class, a required first term sophomore class. The purpose of the class is to help our students develop the technical writing skills needed for their computer science studies and related research activities. The students are instructed on the formats of a variety of technical documents and selected techniques needed to write these and other scientific papers. Emphasis is placed on the technical writing process and basic writing skills. (Izzo, 1996)

Content

The content of the course's first term remains much as first planned. Early lessons concentrate on the teaching the importance of a good writing process. Emphasis is placed on the necessity to adequate prepare prior to drafting and the need to properly review and revise all writings. Also, basic technical writing techniques are presented and incorporated into assignments. The development of paragraphs and essays is reviewed, and the students are required write an technically oriented essay. In addition, weekly quizzes involving paragraph writings are used throughout the term to help develop the students' writing skills.

Later lessons and assignments involve the specific types of writings the students are expected to use in their university studies and early work activities. The writings are still limited to letters, progress reports, proposals, and, as time permits, operational instructions. However, efforts are being extended to coordinate with the computer science teaching staff to develop even more relevant and effective assignments.

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Section	Title
	Technical Writing 1 Course Syllabus
1	**Introduction to Technical Writing**
2	**Technical Writing**
3	**Technical Writing Techniques**
4	**Agreement and Conciseness**

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Lesson	Title
5	**The Writing Process**
6	**The Writing Process** - continued
7	**Business Letters**
8	**Business Letters and Word Selection**
9	**Midterm Review**
10	**Informal Reports**
12	**Semi-formal Reports**
13	**Technical Proposals**
14	**Operational Instructions**

Appendices

The appendices were added to the handbook to provide the students with important information related to technical writing. The appendices include several important types of material. One appendix provides the students with the LaTeX formats that can be used to complete their writings on the university workstations. A second appendix provides the students with exercises and solutions to help improve their writing skills. In addition, three appendixes are included to provide the students with samples of the letters, progress reports, and proposals that have been completed by students in previous classes.

Appendices

Appendix	Title
A	**LaTeX Formats**
B	**Exercises**
C	**Business Letter Example**
D	**Progress Report Examples**
E	**Proposal Examples**

Conclusion

The development of the two term technical writing course for the University of Aizu has progressed in a consistent, orderly manner over the past three years. The course content and materials used have been modified to fit the needs of our students. The placement of Technical Writing 2 in the senior year was recommended by the Technical Writing Courseware Project team and approved by the Academic Affairs Committee to provide students with the instruction and assistance when it is most needed. The accompanying change in course content and material development will help every student complete an important academic requirement, the graduation research report.

In support of the Technical Writing 1 course for our computer science majors, the finalized version of the *Technical Writing 1 Students Handbook* will be published in March 1997. This handbook will provide the University of Aizu students with course material specifically designed to meet their academic and general writing needs. The *Technical Writing 2 Students Handbook* will be completed prior to the presentation of the the next Technical Writing 2 class in the fall of 1998, and it will be structured to help the students develop and complete their graduation research reports.

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